

110TH CONGRESS  
2D SESSION

# H. R. 6063

To authorize the programs of the National Aeronautics and Space  
Administration, and for other purposes.

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## IN THE HOUSE OF REPRESENTATIVES

MAY 15, 2008

Mr. UDALL of Colorado (for himself, Mr. GORDON of Tennessee, Mr. HALL  
of Texas, and Mr. FEENEY) introduced the following bill; which was re-  
ferred to the Committee on Science and Technology

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## A BILL

To authorize the programs of the National Aeronautics and  
Space Administration, and for other purposes.

1       *Be it enacted by the Senate and House of Representa-*  
2       *tives of the United States of America in Congress assembled,*

3       **SECTION 1. SHORT TITLE; TABLE OF CONTENTS.**

4       (a) SHORT TITLE.—This Act may be cited as the  
5       “National Aeronautics and Space Administration Author-  
6       ization Act of 2008”.

7       (b) TABLE OF CONTENTS.—The table of contents for  
8       this Act is as follows:

- Sec. 1. Short title; table of contents.
- Sec. 2. Findings.
- Sec. 3. Definitions.

TITLE I—AUTHORIZATION OF APPROPRIATIONS FOR FISCAL  
YEAR 2009

Sec. 101. Fiscal year 2009.

TITLE II—EARTH SCIENCE

- Sec. 201. Goal.
- Sec. 202. Governance of United States Earth observations activities.
- Sec. 203. Decadal survey missions.
- Sec. 204. Transitioning experimental research into operational services.
- Sec. 205. Landsat thermal infrared data continuity.
- Sec. 206. Reauthorization of Glory Mission.
- Sec. 207. Plan for disposition of Deep Space Climate Observatory.

TITLE III—AERONAUTICS

- Sec. 301. Environmentally friendly aircraft research and development initiative.
- Sec. 302. Research alignment.
- Sec. 303. Research program to determine perceived impact of sonic booms.
- Sec. 304. External review of NASA's aviation safety-related research programs.
- Sec. 305. Interagency research initiative on the impact of aviation on the climate.
- Sec. 306. Research program on design for certification.
- Sec. 307. Aviation weather research.
- Sec. 308. Joint Aeronautics Research and Development Advisory Committee.
- Sec. 309. Funding for research and development activities in support of other mission directorates.
- Sec. 310. University-based centers for research on aviation training.

TITLE IV—INTERNATIONAL EXPLORATION INITIATIVE

- Sec. 401. Sense of Congress.
- Sec. 402. Stepping stone approach to exploration.
- Sec. 403. Lunar outpost.
- Sec. 404. Exploration technology development.
- Sec. 405. Exploration risk mitigation plan.
- Sec. 406. Exploration crew rescue.
- Sec. 407. Participatory exploration.
- Sec. 408. Science and exploration.

TITLE V—SPACE SCIENCE

- Sec. 501. Technology development.
- Sec. 502. Provision for future servicing of observatory-class scientific spacecraft.
- Sec. 503. Mars exploration.
- Sec. 504. Importance of a balanced science program.
- Sec. 505. Restoration of radioisotope thermoelectric generator material production.
- Sec. 506. Assessment of impediments to interagency cooperation on space and Earth science missions.
- Sec. 507. Assessment of cost growth.

TITLE VI—SPACE OPERATIONS

Subtitle A—International Space Station

- Sec. 601. Utilization.
- Sec. 602. Research management plan.
- Sec. 603. Contingency plan for cargo resupply.

#### Subtitle B—Space Shuttle

- Sec. 611. Flight manifest.
- Sec. 612. Disposition of shuttle-related assets.
- Sec. 613. Space Shuttle transition liaison office.

#### Subtitle C—Launch Services

- Sec. 621. Launch services strategy.

### TITLE VII—EDUCATION

- Sec. 701. Response to review.
- Sec. 702. External review of Explorer Schools program.

### TITLE VIII—NEAR-EARTH OBJECTS

- Sec. 801. In general.
- Sec. 802. Findings.
- Sec. 803. Requests for information.
- Sec. 804. Establishment of policy.
- Sec. 805. Planetary radar capability.
- Sec. 806. Arecibo Observatory.

### TITLE IX—COMMERCIAL INITIATIVES

- Sec. 901. Sense of Congress.
- Sec. 902. Commercial crew initiative.

### TITLE X—REVITALIZATION OF NASA INSTITUTIONAL CAPABILITIES

- Sec. 1001. Review of information security controls.
- Sec. 1002. Maintenance and upgrade of Center facilities.
- Sec. 1003. Assessment of NASA laboratory capabilities.

### TITLE XI—OTHER PROVISIONS

- Sec. 1101. Space weather.
- Sec. 1102. Space traffic management.
- Sec. 1103. Study of export control policies related to civil and commercial space activities.
- Sec. 1104. Astronaut health care.
- Sec. 1105. National Academies decadal surveys.
- Sec. 1106. Innovation prizes.

## 1 SEC. 2. FINDINGS.

2       The Congress finds, on this, the 50th anniversary of  
3 the establishment of the National Aeronautics and Space  
4 Administration, the following:

1           (1) NASA is and should remain a multimission  
2           agency with a balanced and robust set of core mis-  
3           sions in science, aeronautics, and human space flight  
4           and exploration.

5           (2) Investment in NASA's programs will pro-  
6           mote innovation through research and development,  
7           and will improve the competitiveness of the United  
8           States.

9           (3) Investment in NASA's programs, like in-  
10          vestments in other Federal science and technology  
11          activities, is an investment in our future.

12          (4) Properly structured, NASA's activities can  
13          contribute to an improved quality of life, economic  
14          vitality, United States leadership in peaceful co-  
15          operation with other nations on challenging under-  
16          takings in science and technology, national security,  
17          and the advancement of knowledge.

18          (5) NASA should assume a leadership role in a  
19          cooperative international Earth observations and re-  
20          search effort to address key research issues associ-  
21          ated with climate change and its impacts on the  
22          Earth system.

23          (6) NASA should undertake a program of aero-  
24          nautical research, development, and where appro-

1        piate demonstration activities with the overarching  
2        goals of—

3                (A) ensuring that the Nation’s future air  
4                transportation system can handle up to 3 times  
5                the current travel demand and incorporate new  
6                vehicle types with no degradation in safety or  
7                adverse environmental impact on local commu-  
8                nities;

9                (B) protecting the environment;

10                (C) promoting the security of the Nation;

11                and

12                (D) retaining the leadership of the United  
13                States in global aviation.

14                (7) Human and robotic exploration of the solar  
15                system will be a significant long term undertaking of  
16                humanity in the 21st century and beyond, and it is  
17                in the national interest that the United States  
18                should assume a leadership role in a cooperative  
19                international exploration initiative.

20                (8) Developing United States human space  
21                flight capabilities to allow independent American ac-  
22                cess to the International Space Station, and to ex-  
23                plore beyond low Earth orbit, is a strategically im-  
24                portant national imperative, and all prudent steps  
25                should thus be taken to bring the Orion Crew Explo-

1       ration Vehicle and Ares I Crew Launch Vehicle to  
2       full operational capability as soon as practicable.

3           (9) NASA’s scientific research activities have  
4       contributed much to the advancement of knowledge,  
5       provided societal benefits, and helped train the next  
6       generation of scientists and engineers, and those ac-  
7       tivities should continue to be an important priority.

8           (10) NASA should make a sustained commit-  
9       ment to a robust long-term technology development  
10      activity. Such investments represent the critically  
11      important “seed corn” on which NASA’s ability to  
12      carry out challenging and productive missions in the  
13      future will depend.

14          (11) NASA, through its pursuit of challenging  
15      and relevant activities, can provide an important  
16      stimulus to the next generation to pursue careers in  
17      science, technology, engineering, and mathematics.

18          (12) Commercial activities have substantially  
19      contributed to the strength of both the United  
20      States space program and the national economy, and  
21      the development of a healthy and robust United  
22      States commercial space sector should continue to be  
23      encouraged.

24          (13) It is in the national interest for the United  
25      States to have an export control policy that protects

1 the national security while also enabling the United  
 2 States aerospace industry to compete effectively in  
 3 the global market place and the United States to un-  
 4 dertake cooperative programs in science and human  
 5 space flight in an effective and efficient manner.

6 **SEC. 3. DEFINITIONS.**

7 In this Act:

8 (1) ADMINISTRATOR.—The term “Adminis-  
 9 trator” means the Administrator of NASA.

10 (2) NASA.—The term “NASA” means the Na-  
 11 tional Aeronautics and Space Administration.

12 (3) NOAA.—The term “NOAA” means the Na-  
 13 tional Oceanic and Atmospheric Administration.

14 (4) OSTP.—The term “OSTP” means the Of-  
 15 fice of Science and Technology Policy.

16 **TITLE I—AUTHORIZATION OF**  
 17 **APPROPRIATIONS FOR FIS-**  
 18 **CAL YEAR 2009**

19 **SEC. 101. FISCAL YEAR 2009.**

20 (a) BASELINE AUTHORIZATION.—There are author-  
 21 ized to be appropriated to NASA for fiscal year 2009  
 22 \$19,210,000,000, as follows:

23 (1) For Science, \$4,932,200,000, of which—

24 (A) \$1,518,000,000 shall be for Earth  
 25 Science, including \$29,200,000 for Suborbital

1 activities and \$2,500,000 for carrying out sec-  
2 tion 313 of the National Aeronautics and Space  
3 Administration Authorization Act of 2005  
4 (Public Law 109–155);

5 (B) \$1,483,000,000 shall be for Planetary  
6 Science, including \$486,500,000 for the Mars  
7 Exploration program, \$2,000,000 to continue  
8 planetary radar operations at the Arecibo Ob-  
9 servatory in support of the Near-Earth Object  
10 program, and \$5,000,000 for radioisotope ma-  
11 terial production, to remain available until ex-  
12 pended;

13 (C) \$1,290,400,000 shall be for Astro-  
14 physics, including \$27,300,000 for Suborbital  
15 activities;

16 (D) \$640,800,000 shall be for  
17 Heliophysics, including \$50,000,000 for Sub-  
18 orbital activities; and

19 (E) \$75,000,000 shall be for Cross-Science  
20 Mission Directorate Technology Development,  
21 to be taken on a proportional basis from the  
22 funding subtotals under subparagraphs (A),  
23 (B), (C), and (D).

1           (2) For Aeronautics, \$853,400,000, of which  
2       \$406,900,000 shall be for system-level research, de-  
3       velopment, and demonstration activities related to—

4           (A) aviation safety;

5           (B) environmental impact mitigation, in-  
6       cluding noise, energy efficiency, and emissions;

7           (C) support of the Next Generation Air  
8       Transportation System initiative; and

9           (D) investigation of new vehicle concepts  
10      and flight regimes.

11          (3) For Exploration, \$3,886,000,000, of which  
12      \$100,000,000 shall be for the activities under sec-  
13      tions 902(b) and 902(d); and \$737,800,000 shall be  
14      for Advanced Capabilities, including \$106,300,000  
15      for the Lunar Precursor Robotic Program,  
16      \$276,500,000 for International Space Station-re-  
17      lated research and development activities, and  
18      \$355,000,000 for research and development activi-  
19      ties not related to the International Space Station.

20          (4) For Education, \$128,300,000.

21          (5) For Space Operations, \$6,074,700,000, of  
22      which—

23           (A) \$150,000,000 shall be for an addi-  
24      tional Space Shuttle flight to deliver the Alpha

1           Magnetic Spectrometer to the International  
2           Space Station;

3                 (B) \$100,000,000 shall be to augment  
4           funding for International Space Station Cargo  
5           Services to enhance research utilization of the  
6           International Space Station, to remain available  
7           until expended; and

8                 (C) \$50,000,000 shall be to augment fund-  
9           ing for Space Operations Mission Directorate  
10          reserves and Shuttle Transition and Retirement  
11          activities.

12          (6) For Cross-Agency Support Programs,  
13          \$3,299,900,000.

14          (7) For Inspector General, \$35,500,000.

15          (b) ADDITIONAL AUTHORIZATION TO ADDRESS  
16 HUMAN SPACE FLIGHT GAP.—In addition to the sums  
17 authorized by subsection (a), there are authorized to be  
18 appropriated for the purposes described in subsection  
19 (a)(3) \$1,000,000,000 for fiscal year 2009, to be used to  
20 accelerate the initial operational capability of the Orion  
21 Crew Exploration Vehicle and the Ares I Crew Launch  
22 Vehicle and associated ground support systems, to remain  
23 available until expended.

## 1       **TITLE II—EARTH SCIENCE**

### 2   **SEC. 201. GOAL.**

3       The goal for NASA’s Earth Science program shall  
4 be to pursue a program of Earth observations, research,  
5 and applications activities to better understand the Earth,  
6 how it supports life, and how human activities affect its  
7 ability to do so in the future. In pursuit of this goal,  
8 NASA’s Earth Science program shall ensure that securing  
9 practical benefits for society will be an important measure  
10 of its success in addition to securing new knowledge about  
11 the Earth system and climate change. In further pursuit  
12 of this goal, NASA shall assume a leadership role in devel-  
13 oping and carrying out a cooperative international Earth  
14 observations-based research and applications program.

### 15   **SEC. 202. GOVERNANCE OF UNITED STATES EARTH OBSER-** 16                   **VATIONS ACTIVITIES.**

17       (a) STUDY.—The Director of the OSTP shall enter  
18 into an arrangement with the National Academies for a  
19 study to determine the most appropriate governance struc-  
20 ture for United States Earth Observations programs in  
21 order to meet evolving United States Earth information  
22 needs and facilitate United States participation in global  
23 Earth Observations initiatives.

24       (b) REPORT.—The Director shall transmit the study  
25 to the Committee on Science and Technology of the House

1 of Representatives and the Committee on Commerce,  
2 Science, and Transportation of the Senate not later than  
3 18 months after the date of enactment of this Act, and  
4 shall provide OSTP's plan for implementing the study's  
5 recommendations not later than 24 months after the date  
6 of enactment of this Act.

7 **SEC. 203. DECADAL SURVEY MISSIONS.**

8 (a) IN GENERAL.—The missions recommended in the  
9 National Academies' decadal survey "Earth Science and  
10 Applications from Space" provide the basis for a compel-  
11 ling and relevant program of research and applications,  
12 and the Administrator should work to establish an inter-  
13 national cooperative effort to pursue those missions.

14 (b) PLAN.—The Administrator shall prepare a plan  
15 for submission to Congress not later than 270 days after  
16 the date of enactment of this Act that shall describe how  
17 NASA intends to implement the missions recommended  
18 as described in subsection (a), whether by means of dedi-  
19 cated NASA missions, multi-agency missions, inter-  
20 national cooperative missions, data sharing, or commercial  
21 data buys, or by means of long-term technology develop-  
22 ment to determine whether specific missions would be exe-  
23 cutable at a reasonable cost and within a reasonable  
24 schedule.

1 **SEC. 204. TRANSITIONING EXPERIMENTAL RESEARCH INTO**  
2 **OPERATIONAL SERVICES.**

3 (a) SENSE OF CONGRESS.—It is the sense of the Con-  
4 gress that experimental NASA sensors and missions that  
5 have the potential to benefit society if transitioned into  
6 operational monitoring systems be transitioned into oper-  
7 ational status whenever possible.

8 (b) INTERAGENCY PROCESS.—The Director of  
9 OSTP, in consultation with the Administrator and the Ad-  
10 ministrator of NOAA, shall develop a process for Federal  
11 agencies to transition, when appropriate, NASA Earth  
12 science and space weather missions or sensors into oper-  
13 ational status. The process shall include coordination of  
14 annual agency budget requests as required to execute the  
15 transitions.

16 (c) RESPONSIBLE AGENCY OFFICIAL.—The Adminis-  
17 trator and the Administrator of NOAA shall each des-  
18 ignate an agency official who shall have the responsibility  
19 for and authority to lead NASA's and NOAA's transition  
20 activities and interagency coordination.

21 (d) PLAN.—For each mission or sensor that is deter-  
22 mined to be appropriate for transition under subsection  
23 (b), NASA and NOAA shall transmit to Congress a joint  
24 plan for conducting the transition. The plan shall include  
25 the strategy, milestones, and budget required to execute  
26 the transition. The transition plan shall be transmitted to

1 Congress not later than 60 days after the successful com-  
2 pletion of the mission or sensor critical design review.

3 **SEC. 205. LANDSAT THERMAL INFRARED DATA CON-**  
4 **TINUITY.**

5 (a) PLAN.—In view of the importance of Landsat  
6 thermal infrared data for both scientific research and  
7 water management applications, the Administrator shall  
8 prepare a plan for ensuring the continuity of Landsat  
9 thermal infrared data or its equivalent, including alloca-  
10 tion of costs and responsibility for the collection and dis-  
11 tribution of the data, and a budget plan. As part of the  
12 plan, the Administrator shall provide an option for devel-  
13 oping a thermal infrared sensor at minimum cost to be  
14 flown on the Landsat Data Continuity Mission with min-  
15 imum delay to the schedule of the Landsat Data Con-  
16 tinuity Mission.

17 (b) DEADLINE.—The plan shall be provided to Con-  
18 gress not later than 60 days after the date of enactment  
19 of this Act.

20 **SEC. 206. REAUTHORIZATION OF GLORY MISSION.**

21 (a) REAUTHORIZATION.—Congress reauthorizes  
22 NASA to continue with development of the Glory Mission,  
23 which will examine how aerosols and solar energy affect  
24 the Earth's climate.

1 (b) BASELINE REPORT.—Pursuant to the National  
2 Aeronautics and Space Administration Authorization Act  
3 of 2005 (Public Law 109–155), not later than 90 days  
4 after the date of enactment of this Act, the Administrator  
5 shall transmit a new baseline report consistent with sec-  
6 tion 103(b)(2) of such Act. The report shall include an  
7 analysis of the factors contributing to cost growth and the  
8 steps taken to address them.

9 **SEC. 207. PLAN FOR DISPOSITION OF DEEP SPACE CLIMATE**  
10 **OBSERVATORY.**

11 (a) PLAN.—NASA shall develop a plan for the Deep  
12 Space Climate Observatory (DSCOVR), including such  
13 options as using the parts of the spacecraft in the develop-  
14 ment and assembly of other science missions, transferring  
15 the spacecraft to another agency, reconfiguring the space-  
16 craft for another Earth science mission, establishing a  
17 public-private partnership for the mission, and entering  
18 into an international cooperative partnership to use the  
19 spacecraft for its primary or other purposes. The plan  
20 shall include an estimate of budgetary resources and  
21 schedules required to implement each of the options.

22 (b) CONSULTATION.—NASA shall consult, as nec-  
23 essary, with other Federal agencies, industry, academic in-  
24 stitutions, and international space agencies in developing  
25 the plan.

1 (c) REPORT.—The Administrator shall transmit the  
2 plan required under subsection (a) to the Committee on  
3 Science and Technology of the House of Representatives  
4 and the Committee on Commerce, Science, and Transpor-  
5 tation of the Senate not later than 180 days after the date  
6 of enactment of this Act.

## 7 **TITLE III—AERONAUTICS**

### 8 **SEC. 301. ENVIRONMENTALLY FRIENDLY AIRCRAFT RE-** 9 **SEARCH AND DEVELOPMENT INITIATIVE.**

10 The Administrator shall establish an initiative of re-  
11 search, development, and demonstration, in a relevant en-  
12 vironment, of technologies to enable the following commer-  
13 cial aircraft performance characteristics:

14 (1) Noise levels on takeoff and on airport ap-  
15 proach and landing that do not exceed ambient noise  
16 levels in the absence of flight operations in the vicin-  
17 ity of airports from which such commercial aircraft  
18 would normally operate, without increasing energy  
19 consumption or nitrogen oxide emissions compared  
20 to aircraft in commercial service as of the date of  
21 enactment of this Act.

22 (2) Significant reductions in greenhouse gas  
23 emissions compared to aircraft in commercial serv-  
24 ices as of the date of enactment of this Act.

1 **SEC. 302. RESEARCH ALIGNMENT.**

2 In addition to pursuing the research and development  
3 initiative described in section 301, the Administrator shall,  
4 to the maximum extent practicable within available fund-  
5 ing, align the fundamental aeronautics research program  
6 to address high priority technology challenges of the Na-  
7 tional Academies' Decadal Survey of Civil Aeronautics.

8 **SEC. 303. RESEARCH PROGRAM TO DETERMINE PERCEIVED**  
9 **IMPACT OF SONIC BOOMS.**

10 (a) IN GENERAL.—The ability to fly commercial air-  
11 craft over land at supersonic speeds without adverse im-  
12 pacts on the environment or on local communities would  
13 open new markets and enable new transportation capabili-  
14 ties. In order to have the basis for establishing an appro-  
15 priate sonic boom standard for such flight operations, a  
16 research program is needed to assess the impact in a rel-  
17 evant environment of commercial supersonic flight oper-  
18 ations.

19 (b) ESTABLISHMENT.—The Administrator shall es-  
20 tablish a cooperative research program with industry, in-  
21 cluding the conduct of flight demonstrations in a relevant  
22 environment, to collect data on the perceived impact of  
23 sonic booms that would enable the promulgation of a  
24 standard that would have to be met for overland commer-  
25 cial supersonic flight operations.

1 **SEC. 304. EXTERNAL REVIEW OF NASA'S AVIATION SAFETY-**  
2 **RELATED RESEARCH PROGRAMS.**

3 (a) REVIEW.—The Administrator shall enter into an  
4 arrangement with the National Research Council for an  
5 independent review of NASA's aviation safety-related re-  
6 search programs. The review shall assess whether—

7 (1) the programs have well-defined, prioritized,  
8 and appropriate research objectives;

9 (2) the programs are properly coordinated with  
10 the safety research programs of the Federal Aviation  
11 Administration and other relevant Federal agencies;

12 (3) the programs have allocated appropriate re-  
13 sources to each of the research objectives; and

14 (4) suitable mechanisms exist for transitioning  
15 the research results from the programs into oper-  
16 ational technologies and procedures and certification  
17 activities in a timely manner.

18 (b) REPORT.—Not later than 14 months after the  
19 date of enactment of this Act, the Administrator shall sub-  
20 mit to the Committee on Science and Technology of the  
21 House of Representatives and the Committee on Com-  
22 merce, Science, and Transportation of the Senate a report  
23 on the results of the review.

1 **SEC. 305. INTERAGENCY RESEARCH INITIATIVE ON THE IM-**  
2 **PACT OF AVIATION ON THE CLIMATE.**

3 (a) IN GENERAL.—The Administrator, in coordina-  
4 tion with the United States Climate Change Science Pro-  
5 gram and other appropriate agencies, shall establish a re-  
6 search initiative to assess the impact of aviation on the  
7 climate and, if warranted, to evaluate approaches to miti-  
8 gate that impact.

9 (b) RESEARCH PLAN.—Not later than 1 year after  
10 the date of enactment of this Act, the participating Fed-  
11 eral entities shall jointly develop a plan for the research  
12 initiative that contains objectives, proposed tasks, mile-  
13 stones, and a 5-year budgetary profile.

14 (c) REVIEW.—The Administrator shall enter into an  
15 arrangement with the National Research Council for con-  
16 ducting an independent review of the interagency research  
17 program plan, and shall provide the results of that review  
18 to the Committee on Science and Technology of the House  
19 of Representatives and the Committee on Commerce,  
20 Science, and Transportation of the Senate not later than  
21 2 years after the date of enactment of this Act.

22 **SEC. 306. RESEARCH PROGRAM ON DESIGN FOR CERTIFI-**  
23 **CATION.**

24 (a) PROGRAM.—Not later than 6 months after the  
25 date of enactment of this Act, NASA, in consultation with  
26 other appropriate agencies, shall establish a research pro-

1 gram on methods to improve both confidence in and the  
2 timeliness of certification of new technologies for their in-  
3 troduction into the national airspace system.

4 (b) RESEARCH PLAN.—Not later than 1 year after  
5 the date of enactment of this Act, as part of the activity  
6 described in subsection (a), NASA shall develop a plan  
7 for the research program that contains objectives, pro-  
8 posed tasks, milestones, and a 5-year budgetary profile.

9 (c) REVIEW.—The Administrator shall enter into an  
10 arrangement with the National Research Council for con-  
11 ducting an independent review of the research program  
12 plan, and shall provide the results of that review to the  
13 Committee on Science and Technology of the House of  
14 Representatives and the Committee on Commerce,  
15 Science, and Transportation of the Senate not later than  
16 2 years after the date of enactment of this Act.

17 **SEC. 307. AVIATION WEATHER RESEARCH.**

18 The Administrator shall establish a program of col-  
19 laborative research with NOAA on convective weather  
20 events, with the goal of significantly improving the reli-  
21 ability of 2-hour to 6-hour aviation weather forecasts.

22 **SEC. 308. JOINT AERONAUTICS RESEARCH AND DEVELOP-**  
23 **MENT ADVISORY COMMITTEE.**

24 (a) ESTABLISHMENT.—A joint Aeronautics Research  
25 and Development Advisory Committee (in this section re-

1 ferred to as the “Advisory Committee”) shall be estab-  
2 lished.

3 (b) DUTIES.—The Advisory Committee shall—

4 (1) assess, and make recommendations regard-  
5 ing, the coordination of research and development  
6 activities of NASA and the Federal Aviation Admin-  
7 istration;

8 (2) assess, and make recommendations regard-  
9 ing, the status of the activities of NASA and the  
10 Federal Aviation Administration’s research and de-  
11 velopment programs as they relate to the rec-  
12 ommendations contained in the National Research  
13 Council’s 2006 report entitled “Decadal Survey of  
14 Civil Aeronautics”, and the recommendations con-  
15 tained in subsequent National Research Council re-  
16 ports of a similar nature; and

17 (3) not later than March 15 of each year,  
18 transmit a report to the Administrator, the Adminis-  
19 trator of the Federal Aviation Administration, the  
20 Committee on Science and Technology of the House  
21 of Representatives, and the Committee on Com-  
22 merce, Science, and Transportation of the Senate on  
23 the Advisory Committee’s findings and recommenda-  
24 tions under paragraphs (1) and (2).

1 (c) MEMBERSHIP.—The Advisory Committee shall  
2 consist of 10 members, none of whom shall be a Federal  
3 employee, including—

4 (1) 5 members selected by the Administrator;  
5 and

6 (2) 5 members selected by the Chair of the  
7 Federal Aviation Administration’s Research, Engi-  
8 neering, and Development Advisory Committee  
9 (REDACTED).

10 (d) SELECTION PROCESS.—Initial selections under  
11 subsection (c) shall be made within 3 months after the  
12 date of enactment of this Act. Vacancies shall be filled  
13 in the same manner as provided in subsection (c).

14 (e) CHAIRPERSON.—The Advisory Committee shall  
15 select a chairperson from among its members.

16 (f) COORDINATION.—The Advisory Committee shall  
17 coordinate with the advisory bodies of other Federal agen-  
18 cies, which may engage in related research activities.

19 (g) COMPENSATION.—The members of the Advisory  
20 Committee shall serve without compensation, but shall re-  
21 ceive travel expenses, including per diem in lieu of subsist-  
22 ence, in accordance with sections 5702 and 5703 of title  
23 5, United States Code.

1 (h) MEETINGS.—The Advisory Committee shall con-  
 2 vene, in person or by electronic means, at least 4 times  
 3 per year.

4 (i) QUORUM.—A majority of the members serving on  
 5 the Advisory Committee shall constitute a quorum for pur-  
 6 poses of conducting the business of the Advisory Com-  
 7 mittee.

8 (j) DURATION.—Section 14 of the Federal Advisory  
 9 Committee Act shall not apply to the Advisory Committee.

10 **SEC. 309. FUNDING FOR RESEARCH AND DEVELOPMENT**

11 **ACTIVITIES IN SUPPORT OF OTHER MISSION**

12 **DIRECTORATES.**

13 Research and development activities performed by the  
 14 Aeronautics Research Mission Directorate with the pri-  
 15 mary objective of assisting in the development of a flight  
 16 project in another Mission Directorate shall be funded by  
 17 the Mission Directorate seeking assistance.

18 **SEC. 310. UNIVERSITY-BASED CENTERS FOR RESEARCH ON**

19 **AVIATION TRAINING.**

20 Section 427(a) of the National Aeronautics and  
 21 Space Administration Authorization Act of 2005 (Public  
 22 Law 109–155) is amended by striking “may” and insert-  
 23 ing “shall”.

1       **TITLE IV—INTERNATIONAL**  
2       **EXPLORATION INITIATIVE**

3   **SEC. 401. SENSE OF CONGRESS.**

4       It is the sense of Congress that the President of the  
5   United States should invite America’s friends and allies  
6   to participate in a long-term international initiative under  
7   the leadership of the United States to expand human and  
8   robotic presence into the solar system, including the explo-  
9   ration and utilization of the Moon, near Earth asteroids,  
10   Lagrangian points, and eventually Mars and its moons,  
11   among other exploration and utilization goals.

12   **SEC. 402. STEPPING STONE APPROACH TO EXPLORATION.**

13       In order to maximize the cost-effectiveness of the  
14   long-term exploration and utilization activities of the  
15   United States, the Administrator shall take all necessary  
16   steps to ensure that activities in its lunar exploration pro-  
17   gram shall be designed and implemented in a manner that  
18   gives strong consideration to how those activities might  
19   also help meet the requirements of future exploration and  
20   utilization activities beyond the Moon. The timetable of  
21   the lunar phase of the long-term international exploration  
22   initiative shall be determined by the availability of funding  
23   and agreement on an international cooperative framework  
24   for the conduct of the international exploration initiative.  
25   However, once an exploration-related project enters its de-

1 velopment phase, the Administrator shall seek, to the max-  
2 imum extent practicable, to complete that project without  
3 undue delays.

4 **SEC. 403. LUNAR OUTPOST.**

5 (a) ESTABLISHMENT.—As NASA works toward the  
6 establishment of a lunar outpost, NASA shall make no  
7 plans that would require a lunar outpost to be occupied  
8 to maintain its viability. Any such outpost shall be oper-  
9 able as a human-tended facility capable of remote or au-  
10 tonomous operation for extended periods.

11 (b) DESIGNATION.—The United States portion of the  
12 first human-tended outpost established on the surface of  
13 the Moon shall be designated the “Neil A. Armstrong  
14 Lunar Outpost”.

15 (c) CONGRESSIONAL INTENT.—It is the intent of  
16 Congress that NASA shall make use of commercial serv-  
17 ices to the maximum extent practicable in support of its  
18 lunar outpost activities.

19 **SEC. 404. EXPLORATION TECHNOLOGY DEVELOPMENT.**

20 (a) IN GENERAL.—A robust program of long-term  
21 exploration-related technology research and development  
22 will be essential for the success and sustainability of any  
23 enduring initiative of human and robotic exploration of the  
24 solar system.

1       (b) ESTABLISHMENT.—The Administrator shall es-  
2       tablish and maintain a program of long-term exploration-  
3       related technology research and development that is not  
4       tied to specific flight projects and that has a funding goal  
5       of at least 10 percent of the total budget of the Explo-  
6       ration Systems Mission Directorate.

7       (c) GOALS.—The long-term technology program shall  
8       have the goal of having at least 50 percent of the funding  
9       allocated to external grants and contracts with univer-  
10      sities, research institutions, and industry.

11   **SEC. 405. EXPLORATION RISK MITIGATION PLAN.**

12      (a) PLAN.—The Administrator shall prepare a plan  
13      that identifies and prioritizes the scientific and technical  
14      risks that will need to be addressed in carrying out human  
15      exploration beyond low Earth orbit and the research and  
16      development activities required to address those risks. The  
17      plan shall address the role of the International Space Sta-  
18      tion in exploration risk mitigation and include a detailed  
19      description of the specific steps being taken to utilize the  
20      International Space Station for that purpose.

21      (b) REPORT.—The Administrator shall transmit to  
22      the Committee on Science and Technology of the House  
23      of Representatives and the Committee on Commerce,  
24      Science, and Transportation of the Senate the plan de-

1 scribed in subsection (a) not later than one year after the  
2 date of enactment of this Act.

3 **SEC. 406. EXPLORATION CREW RESCUE.**

4 In order to maximize the ability to rescue astronauts  
5 whose space vehicles have become disabled, the Adminis-  
6 trator shall enter into discussions with the appropriate  
7 representatives of spacefaring nations who have or plan  
8 to have crew transportation systems capable of orbital  
9 flight or flight beyond low Earth orbit for the purpose of  
10 agreeing on a common docking system standard.

11 **SEC. 407. PARTICIPATORY EXPLORATION.**

12 (a) IN GENERAL.—The Administrator shall develop  
13 a technology plan to enable dissemination of information  
14 to the public to allow the public to experience missions  
15 to the Moon, Mars, or other bodies within our solar system  
16 by leveraging advanced exploration technologies. The plan  
17 shall identify opportunities to leverage technologies in  
18 NASA’s Constellation systems that deliver a rich, multi-  
19 media experience to the public, and that facilitate partici-  
20 pation by the public, the private sector, and international  
21 partners. Technologies for collecting high-definition video,  
22 3-dimensional images, and scientific data, along with the  
23 means to rapidly deliver this content through extended  
24 high bandwidth communications networks shall be consid-  
25 ered as part of this plan. It shall include a review of high

1 bandwidth radio and laser communications, high-defini-  
2 tion video, stereo imagery, 3-dimensional scene cameras,  
3 and Internet routers in space, from orbit, and on the lunar  
4 surface. The plan shall also consider secondary cargo ca-  
5 pability for technology validation and science mission op-  
6 portunities. In addition, the plan shall identify opportuni-  
7 ties to develop and demonstrate these technologies on the  
8 International Space Station and robotic missions to the  
9 Moon.

10 (b) REPORT.—Not later than 270 days after the date  
11 of enactment of this Act, the Administrator shall submit  
12 the plan to the Committee on Science and Technology of  
13 the House of Representatives and the Committee on Com-  
14 merce, Science, and Transportation of the Senate.

15 **SEC. 408. SCIENCE AND EXPLORATION.**

16 It is the sense of Congress that NASA’s scientific and  
17 human exploration activities are synergistic, i.e. science  
18 enables exploration and human exploration enables  
19 science. The Congress encourages the Administrator to co-  
20 ordinate, where practical, NASA’s science and exploration  
21 activities with the goal of maximizing the success of  
22 human exploration initiatives and furthering our under-  
23 standing of the Universe that we explore.

# **TITLE V—SPACE SCIENCE**

## **SEC. 501. TECHNOLOGY DEVELOPMENT.**

The Administrator shall establish a cross-Directorate long-term technology development program for space and Earth science within the Science Mission Directorate for the development of new technology. The program shall be independent of the flight projects under development. NASA shall have a goal of funding the cross-Directorate technology development program at a level of 5 percent of the total Science Mission Directorate annual budget. The program shall be structured to include competitively awarded grants and contracts.

## **SEC. 502. PROVISION FOR FUTURE SERVICING OF OBSERVATORY-CLASS SCIENTIFIC SPACECRAFT.**

The Administrator shall take all necessary steps to ensure that provision is made in the design and construction of all future observatory-class scientific spacecraft intended to be deployed in Earth orbit or at a Lagrangian point in space for robotic or human servicing and repair.

## **SEC. 503. MARS EXPLORATION.**

Congress reaffirms its support for a systematic, integrated program of exploration of the Martian surface to examine the planet whose surface is most like Earth's, to search for evidence of past or present life, and to examine

1 Mars for future habitability and as a long-term goal for  
2 future human exploration.

3 **SEC. 504. IMPORTANCE OF A BALANCED SCIENCE PRO-**  
4 **GRAM.**

5       It is the sense of Congress that a balanced and ade-  
6 quately funded set of activities, consisting of NASA's re-  
7 search and analysis grants programs, technology develop-  
8 ment, small, medium-sized, and large space science mis-  
9 sions, and suborbital research activities, contributes to a  
10 robust and productive science program and serves as a  
11 catalyst for innovation. It is further the sense of Congress  
12 that suborbital flight activities, including the use of sound-  
13 ing rockets, aircraft, and high-altitude balloons, offer valu-  
14 able opportunities to advance science, train the next gen-  
15 eration of scientists and engineers, and provide opportuni-  
16 ties for participants in the programs to acquire skills in  
17 systems engineering and systems integration that are crit-  
18 ical to maintaining the Nation's leadership in space pro-  
19 grams. The Congress believes that it is in the national in-  
20 terest to expand the size of NASA's suborbital research  
21 program.

1 **SEC. 505. RESTORATION OF RADIOISOTOPE THERMO-**  
2 **ELECTRIC GENERATOR MATERIAL PRODUC-**  
3 **TION.**

4 (a) PLAN.—The Director of OSTP shall develop a  
5 plan for restarting and sustaining the domestic production  
6 of radioisotope thermoelectric generator material for deep  
7 space and other space science missions.

8 (b) REPORT.—The plan developed under subsection  
9 (a) shall be transmitted to Congress not later than 270  
10 days after the date of enactment of this Act.

11 **SEC. 506. ASSESSMENT OF IMPEDIMENTS TO INTERAGENCY**  
12 **COOPERATION ON SPACE AND EARTH**  
13 **SCIENCE MISSIONS.**

14 (a) ASSESSMENT.—The Administrator shall enter  
15 into an arrangement with the National Academies to as-  
16 sess impediments to the successful conduct of interagency  
17 cooperation on space and Earth science missions, to pro-  
18 vide lessons learned and best practices, and to recommend  
19 steps to help facilitate successful interagency collabora-  
20 tions on space and Earth science missions.

21 (b) REPORT.—The report of the assessment carried  
22 out under subsection (a) shall be transmitted to the Com-  
23 mittee on Science and Technology of the House of Rep-  
24 resentatives and the Committee on Commerce, Science,  
25 and Transportation of the Senate not later than 15  
26 months after the date of enactment of this Act.

1 **SEC. 507. ASSESSMENT OF COST GROWTH.**

2 (a) STUDY.—The Administrator shall enter into an  
 3 arrangement for an independent external assessment to  
 4 identify the primary causes of cost growth in the large,  
 5 medium-sized, and small space and Earth science space-  
 6 craft mission classes, and make recommendations as to  
 7 what changes, if any, should be made to contain costs and  
 8 ensure frequent mission opportunities in NASA’s science  
 9 spacecraft mission programs.

10 (b) REPORT.—The report of the assessment con-  
 11 ducted under subsection (a) shall be submitted to Con-  
 12 gress not later than 15 months after the date of enactment  
 13 of this Act.

14 **TITLE VI—SPACE OPERATIONS**  
 15 **Subtitle A—International Space**  
 16 **Station**

17 **SEC. 601. UTILIZATION.**

18 The Administrator shall take all necessary steps to  
 19 ensure that the International Space Station remains a via-  
 20 ble and productive facility capable of potential United  
 21 States utilization through at least 2020 and shall take no  
 22 steps that would preclude its continued operation and uti-  
 23 lization by the United States after 2016.

24 **SEC. 602. RESEARCH MANAGEMENT PLAN.**

25 (a) RESEARCH MANAGEMENT PLAN.—The Adminis-  
 26 trator shall develop a research management plan for the

1 International Space Station. The plan shall include a proc-  
2 ess for selecting and prioritizing research activities (in-  
3 cluding fundamental, applied, commercial, and other re-  
4 search) for flight on the International Space Station. This  
5 plan shall be used to prioritize resources such as crew  
6 time, racks and equipment, and United States access to  
7 international research facilities and equipment. The plan  
8 shall also identify the organization to be responsible for  
9 managing United States research on the International  
10 Space Station, including a description of the relationship  
11 of the management institution with NASA (e.g., internal  
12 NASA office, contract, cooperative agreement, or grant),  
13 the estimated length of time for the arrangement, and the  
14 budget required to support the management institution.  
15 The plan shall be developed in consultation with other  
16 Federal agencies, academia, industry, and other relevant  
17 stakeholders. The plan shall be transmitted to Congress  
18 not later than 12 months after the date of enactment of  
19 this Act.

20 (b) ACCESS TO NATIONAL LABORATORY.—The Ad-  
21 ministrator shall—

22 (1) establish a process by which to support  
23 International Space Station National Laboratory  
24 users in identifying their requirements for transpor-  
25 tation of research supplies to and from the Inter-

1 national Space Station, and for communicating those  
2 requirements to NASA and International Space Sta-  
3 tion transportation services providers; and

4 (2) develop an estimate of the transportation  
5 requirements needed to support users of the Inter-  
6 national Space Station National Laboratory and de-  
7 velop a plan for satisfying those requirements by  
8 dedicating a portion of volume on NASA supply mis-  
9 sions to the International Space Station and mis-  
10 sions returning from the International Space Station  
11 to Earth.

12 (c) ASSESSMENT.—The Administrator shall—

13 (1) identify existing research equipment and  
14 racks and support equipment that are manifested for  
15 flight; and

16 (2) provide a detailed description of the status  
17 of research equipment and facilities that were com-  
18 pleted or in development prior to being cancelled,  
19 and provide the budget and milestones for com-  
20 pleting and preparing the equipment for flight on  
21 the International Space Station.

22 (d) ADVISORY COMMITTEE.—Not later than 1 year  
23 after the date of enactment of this Act, the Administrator  
24 shall establish an advisory panel under the Federal Advi-  
25 sory Committee Act to monitor the activities and manage-

1 ment of the International Space Station National Labora-  
2 tory.

3 **SEC. 603. CONTINGENCY PLAN FOR CARGO RESUPPLY.**

4 (a) IN GENERAL.—The International Space Station  
5 represents a significant investment of national resources,  
6 and it is a facility that embodies a cooperative inter-  
7 national approach to the exploration and utilization of  
8 space. As such, it is important that its continued viability  
9 and productivity be ensured, to the maximum extent pos-  
10 sible, after the Space Shuttle is retired.

11 (b) CONTINGENCY PLAN.—The Administrator shall  
12 develop a contingency plan and arrangements, including  
13 use of International Space Station international partner  
14 cargo resupply capabilities, to ensure the continued viabil-  
15 ity and productivity of the International Space Station in  
16 the event that United States commercial cargo resupply  
17 services are not available during any extended period after  
18 the date that the Space Shuttle is retired. The plan shall  
19 be delivered to the Committee on Science and Technology  
20 of the House of Representatives and the Committee on  
21 Commerce, Science, and Transportation of the Senate not  
22 later than one year after the date of enactment of this  
23 Act.

## 1           **Subtitle B—Space Shuttle**

### 2   **SEC. 611. FLIGHT MANIFEST.**

3           (a) BASELINE MANIFEST.—In addition to the Space  
4 Shuttle flights listed as part of the baseline flight manifest  
5 as of January 1, 2008, the Utilization flights ULF–4 and  
6 ULF–5 shall be considered part of the Space Shuttle base-  
7 line flight manifest and shall be flown prior to the retire-  
8 ment of the Space Shuttle.

9           (b) ADDITIONAL FLIGHT TO DELIVER THE ALPHA  
10 MAGNETIC SPECTROMETER TO THE INTERNATIONAL  
11 SPACE STATION.—In addition to the flying of the baseline  
12 manifest as described in subsection (a), the Administrator  
13 shall take all necessary steps to fly one additional Space  
14 Shuttle flight to deliver the Alpha Magnetic Spectrometer  
15 to the International Space Station prior to the retirement  
16 of the Space Shuttle.

17          (c) SPACE SHUTTLE RETIREMENT DATE.—The  
18 Space Shuttle shall be retired following the completion of  
19 the baseline flight manifest and the flight of the additional  
20 flight specified in subsection (b), events that are antici-  
21 pated to occur in 2010.

### 22   **SEC. 612. DISPOSITION OF SHUTTLE-RELATED ASSETS.**

23          Not later than 90 days after the date of enactment  
24 of this Act, the Administrator shall provide a plan to Con-  
25 gress for the disposition of the remaining Space Shuttle

1 orbiters and other Space Shuttle program-related hard-  
 2 ware and facilities after the retirement of the Space Shut-  
 3 tle fleet. The plan shall include a process by which edu-  
 4 cational institutions and science museums and other ap-  
 5 propriate organizations may acquire, through loan or dis-  
 6 posal by the Federal Government, Space Shuttle program-  
 7 related hardware. The Administrator shall not dispose of  
 8 any Space Shuttle-related hardware prior to the comple-  
 9 tion of the plan.

10 **SEC. 613. SPACE SHUTTLE TRANSITION LIAISON OFFICE.**

11 (a) ESTABLISHMENT.—The Administrator shall es-  
 12 tablish an office within NASA’s Office of Human Capital  
 13 Management that shall assist local communities affected  
 14 by the termination of the Space Shuttle program. The of-  
 15 fice shall offer technical assistance and serve as a clearing-  
 16 house to assist communities in identifying services avail-  
 17 able from other Federal agencies.

18 (b) SUNSET.—The Office established under sub-  
 19 section (a) shall cease operations 24 months after the last  
 20 Space Shuttle flight.

21 **Subtitle C—Launch Services**

22 **SEC. 621. LAUNCH SERVICES STRATEGY.**

23 (a) IN GENERAL.—In preparation for the award of  
 24 contracts to follow up on the current NASA Launch Serv-  
 25 ices (NLS) contracts, the Administrator shall develop a

1 strategy for providing domestic commercial launch services  
2 in support of NASA's small and medium-sized Science,  
3 Space Operations, and Exploration missions, consistent  
4 with current law and policy.

5 (b) REPORT.—The Administrator shall transmit a re-  
6 port to the Committee on Science and Technology of the  
7 House of Representatives and the Committee on Com-  
8 merce, Science, and Transportation of the Senate describ-  
9 ing the strategy developed under subsection (a) not later  
10 than 90 days after the date of enactment of this Act. The  
11 report shall provide, at a minimum—

12 (1) the results of the Request for Information  
13 on small to medium-sized launch services released on  
14 April 22, 2008;

15 (2) an analysis of possible alternatives to main-  
16 tain small and medium-sized lift capabilities after  
17 June 30, 2010, including the use of the Department  
18 of Defense's Evolved Expendable Launch Vehicle  
19 (EELV);

20 (3) the recommended alternatives, and associ-  
21 ated 5-year budget plans starting in October 2010  
22 that would enable their implementation; and

23 (4) a contingency plan in the event the rec-  
24 ommended alternatives described in paragraph (3)  
25 are not available when needed.

## 1                   **TITLE VII—EDUCATION**

### 2   **SEC. 701. RESPONSE TO REVIEW.**

3           (a) **PLAN.**—The Administrator shall prepare a plan  
4 identifying actions taken or planned in response to the rec-  
5 ommendations of the National Academies report,  
6 “NASA’s Elementary and Secondary Education Program:  
7 Review and Critique”. For those actions that have not  
8 been implemented, the plan shall include a schedule and  
9 budget required to support the actions.

10          (b) **REPORT.**—The plan prepared under subsection  
11 (a) shall be transmitted to the Committee on Science and  
12 Technology of the House of Representatives and the Com-  
13 mittee on Commerce, Science, and Transportation of the  
14 Senate not later than 1 year after the date of enactment  
15 of this Act.

### 16   **SEC. 702. EXTERNAL REVIEW OF EXPLORER SCHOOLS PRO-** 17                   **GRAM.**

18          (a) **REVIEW.**—The Administrator shall make ar-  
19 rangements for an independent external review of the Ex-  
20 plorer Schools program to evaluate its goals, status, plans,  
21 and accomplishments.

22          (b) **REPORT.**—The report of the independent external  
23 review shall be transmitted to the Committee on Science  
24 and Technology of the House of Representatives and the  
25 Committee on Commerce, Science, and Transportation of

1 the Senate not later than 1 year after the date of enact-  
2 ment of this Act.

3 **TITLE VIII—NEAR-EARTH**  
4 **OBJECTS**

5 **SEC. 801. IN GENERAL.**

6 The Congress reaffirms the policy direction estab-  
7 lished in the National Aeronautics and Space Administra-  
8 tion Authorization Act of 2005 (Public Law 109–155) for  
9 NASA to detect, track, catalogue, and characterize the  
10 physical characteristics of near-Earth objects equal to or  
11 greater than 140 meters in diameter. NASA’s Near-Earth  
12 Object program activities will also provide benefits to  
13 NASA’s scientific and exploration activities.

14 **SEC. 802. FINDINGS.**

15 Congress makes the following findings:

16 (1) Near-Earth objects pose a serious and cred-  
17 ible threat to humankind, as many scientists believe  
18 that a major asteroid or comet was responsible for  
19 the mass extinction of the majority of the Earth’s  
20 species, including the dinosaurs, nearly 65,000,000  
21 years ago.

22 (2) Several such near-Earth objects have only  
23 been discovered within days of the objects’ closest  
24 approach to Earth and recent discoveries of such

1 large objects indicate that many large near-Earth  
2 objects remain undiscovered.

3 (3) Asteroid and comet collisions rank as one of  
4 the most costly natural disasters that can occur.

5 (4) The time needed to eliminate or mitigate  
6 the threat of a collision of a potentially hazardous  
7 near-Earth object with Earth is measured in dec-  
8 ades.

9 (5) Unlike earthquakes and hurricanes, aster-  
10 oids and comets can provide adequate collision infor-  
11 mation, enabling the United States to include both  
12 asteroid-collision and comet-collision disaster recov-  
13 ery and disaster avoidance in its public-safety struc-  
14 ture.

15 (6) Basic information is needed for technical  
16 and policy decisionmaking for the United States to  
17 create a comprehensive program in order to be ready  
18 to eliminate and mitigate the serious and credible  
19 threats to humankind posed by potentially hazardous  
20 near-Earth asteroids and comets.

21 (7) As a first step to eliminate and to mitigate  
22 the risk of such collisions, situation and decision  
23 analysis processes, as well as procedures and system  
24 resources, must be in place well before a collision  
25 threat becomes known.

1 **SEC. 803. REQUESTS FOR INFORMATION.**

2 The Administrator shall issue requests for informa-  
3 tion on—

4 (1) a low-cost space mission with the purpose of  
5 rendezvousing with and characterizing the Apophis  
6 asteroid, which scientists estimate will in 2029 pass  
7 at a distance from Earth that is closer than geo-  
8 stationary satellites; and

9 (2) a medium-sized space mission with the pur-  
10 pose of detecting near-Earth objects equal to or  
11 greater than 140 meters in diameter.

12 **SEC. 804. ESTABLISHMENT OF POLICY.**

13 The Director of OSTP shall—

14 (1) develop a policy for notifying Federal agen-  
15 cies and relevant emergency response institutions of  
16 an impending near-Earth object threat, if near term  
17 public safety is at stake; and

18 (2) recommend a Federal agency or agencies to  
19 be responsible for protecting the Nation from a  
20 near-Earth object that is anticipated to collide with  
21 Earth and implementing a deflection campaign, in  
22 consultation with international bodies, should one be  
23 required.

24 **SEC. 805. PLANETARY RADAR CAPABILITY.**

25 The Administrator shall maintain a planetary radar  
26 that is, at minimum, comparable to the capability provided

1 through the NASA Deep Space Network Goldstone facil-  
2 ity.

3 **SEC. 806. ARECIBO OBSERVATORY.**

4 Congress reiterates its support for the use of the Are-  
5 cibo Observatory for NASA-funded near-Earth object-re-  
6 lated activities. The Administrator shall ensure the avail-  
7 ability of the Arecibo Observatory's planetary radar to  
8 support these activities until the National Academies' re-  
9 view of NASA's approach for the survey and deflection  
10 of near-Earth objects, including a determination of the  
11 role of Arecibo, that was directed to be undertaken by the  
12 Fiscal Year 2008 Omnibus Appropriations Act, is com-  
13 pleted.

14 **TITLE IX—COMMERCIAL**  
15 **INITIATIVES**

16 **SEC. 901. SENSE OF CONGRESS.**

17 It is the sense of Congress that a healthy and robust  
18 commercial sector can make significant contributions to  
19 the successful conduct of NASA's space exploration pro-  
20 gram. While some activities are inherently governmental  
21 in nature, there are many other activities, such as routine  
22 supply of water, fuel, and other consumables to low Earth  
23 orbit or to destinations beyond low Earth orbit, and provi-  
24 sion of power or communications services to lunar out-  
25 posts, that potentially could be carried out effectively and

1 efficiently by the commercial sector at some point in the  
2 future. Congress encourages NASA to look for such serv-  
3 ice opportunities and, to the maximum extent practicable,  
4 make use of the commercial sector to provide those serv-  
5 ices.

6 **SEC. 902. COMMERCIAL CREW INITIATIVE.**

7 (a) IN GENERAL.—In order to stimulate commercial  
8 use of space, help maximize the utility and productivity  
9 of the International Space Station, and enable a commer-  
10 cial means of providing crew transfer and crew rescue  
11 services for the International Space Station, NASA  
12 shall—

13 (1) make use of United States commercially  
14 provided International Space Station crew transfer  
15 and crew rescue services to the maximum extent  
16 practicable, if those commercial services have dem-  
17 onstrated the capability to meet NASA-specified as-  
18 cent, entry, and International Space Station prox-  
19 imity operations safety requirements;

20 (2) limit, to the maximum extent practicable,  
21 the use of the Crew Exploration Vehicle to missions  
22 carrying astronauts beyond low Earth orbit once  
23 commercial crew transfer and crew rescue services  
24 that meet safety requirements become operational;

1           (3) facilitate, to the maximum extent prac-  
2           ticable, the transfer of NASA-developed technologies  
3           to potential United States commercial crew transfer  
4           and rescue service providers, consistent with United  
5           States law; and

6           (4) issue a notice of intent, not later than 180  
7           days after the date of enactment of this Act, to  
8           enter into a funded, competitively awarded Space  
9           Act Agreement with two or more commercial entities  
10          for a Phase 1 Commercial Orbital Transportation  
11          Services (COTS) crewed vehicle demonstration pro-  
12          gram.

13          (b) COTS AUTHORIZATION OF APPROPRIATIONS.—  
14          There are authorized to be appropriated to NASA for the  
15          program described in subsection (a)(4) \$50,000,000 for  
16          fiscal year 2009, to remain available until expended.

17          (c) CONGRESSIONAL INTENT.—It is the intent of  
18          Congress that funding for the program described in sub-  
19          section (a)(4) shall not come at the expense of full funding  
20          for Orion Crew Exploration Vehicle development, Ares I  
21          Crew Launch Vehicle development, or International Space  
22          Station cargo delivery.

23          (d) ADDITIONAL TECHNOLOGIES AUTHORIZATION OF  
24          APPROPRIATIONS.—There are authorized to be appro-  
25          priated to NASA for the provision of International Space

1 Station-compatible docking adaptors and other relevant  
 2 technologies to be made available to the commercial crew  
 3 providers selected to service the International Space Sta-  
 4 tion \$50,000,000, to remain available until expended.

5 (e) CREW TRANSFER AND CREW RESCUE SERVICES  
 6 CONTRACT.—If a commercial provider demonstrates the  
 7 capability to provide International Space Station crew  
 8 transfer and crew rescue services and to satisfy NASA as-  
 9 cent, entry, and International Space Station proximity op-  
 10 erations safety requirements, NASA shall enter into an  
 11 International Space Station crew transfer and crew rescue  
 12 services contract with that commercial provider for a por-  
 13 tion of NASA’s anticipated International Space Station  
 14 crew transfer and crew rescue requirements from the time  
 15 the commercial provider commences operations under con-  
 16 tract with NASA through calendar year 2016, with an op-  
 17 tion to extend the period of performance through calendar  
 18 year 2020.

19 **TITLE X—REVITALIZATION OF**  
 20 **NASA INSTITUTIONAL CAPA-**  
 21 **BILITIES**

22 **SEC. 1001. REVIEW OF INFORMATION SECURITY CONTROLS.**

23 (a) REPORT ON CONTROLS.—Not later than one year  
 24 after the date of enactment of this Act, the Comptroller  
 25 General shall transmit to the Committee on Science and

1 Technology of the House of Representatives and the Com-  
2 mittee on Commerce, Science, and Transportation of the  
3 Senate a review of information security controls that pro-  
4 tect NASA's information technology resources and infor-  
5 mation from inadvertent or deliberate misuse, fraudulent  
6 use, disclosure, modification, or destruction. The review  
7 shall focus on networks servicing NASA's mission direc-  
8 torates. In assessing these controls, the review shall evalu-  
9 ate—

10 (1) the network's ability to limit, detect, and  
11 monitor access to resources and information, thereby  
12 safeguarding and protecting them from unauthorized  
13 access;

14 (2) the physical access to network resources;  
15 and

16 (3) the extent to which sensitive research and  
17 mission data is encrypted.

18 (b) RESTRICTED REPORT ON INTRUSIONS.—Not  
19 later than one year after the date of enactment of this  
20 Act, and in conjunction with the report described in sub-  
21 section (a), the Comptroller General shall transmit to the  
22 Committee on Science and Technology of the House of  
23 Representatives and the Committee on Commerce,  
24 Science, and Transportation of the Senate a restricted re-  
25 port detailing results of vulnerability assessments con-

1 ducted by the Government Accountability Office on  
2 NASA's network resources. Intrusion attempts during  
3 such vulnerability assessments shall be divulged to NASA  
4 senior management prior to their application. The report  
5 shall put vulnerability assessment results in the context  
6 of unauthorized accesses or attempts during the prior two  
7 years and the corrective actions, recent or ongoing, that  
8 NASA has implemented in conjunction with other Federal  
9 authorities to prevent such intrusions.

10 **SEC. 1002. MAINTENANCE AND UPGRADE OF CENTER FA-**  
11 **CILITIES.**

12 (a) IN GENERAL.—In order to sustain healthy Cen-  
13 ters that are capable of carrying out NASA's missions,  
14 the Administrator shall ensure that adequate maintenance  
15 and upgrading of those Center facilities is performed on  
16 a regular basis.

17 (b) REVIEW.—The Administrator shall determine  
18 and prioritize the maintenance and upgrade backlog at  
19 each of NASA's Centers and associated facilities, and shall  
20 develop a strategy and budget plan to reduce that mainte-  
21 nance and upgrade backlog by 50 percent over the next  
22 five years.

23 (c) REPORT.—The Administrator shall deliver a re-  
24 port to Congress on the results of the activities undertaken

1 in subsection (b) concurrently with the delivery of the fis-  
2 cal year 2011 budget request.

3 **SEC. 1003. ASSESSMENT OF NASA LABORATORY CAPABILI-**  
4 **TIES.**

5 (a) IN GENERAL.—NASA’s laboratories are a critical  
6 component of NASA’s research capabilities, and the Ad-  
7 ministrator shall ensure that those laboratories remain  
8 productive.

9 (b) REVIEW.—The Administrator shall enter into an  
10 arrangement for an independent external review of  
11 NASA’s laboratories, including laboratory equipment, fa-  
12 cilities, and support services, to determine whether they  
13 are equipped and maintained at a level adequate to sup-  
14 port NASA’s research activities. The assessment shall also  
15 include an assessment of the relative quality of NASA’s  
16 in-house laboratory equipment and facilities compared to  
17 comparable laboratories elsewhere.

18 **TITLE XI—OTHER PROVISIONS**

19 **SEC. 1101. SPACE WEATHER.**

20 (a) PLAN FOR REPLACEMENT OF ADVANCED COM-  
21 POSITION EXPLORER AT L-1 LAGRANGIAN POINT.—

22 (1) PLAN.—The Director of OSTP shall de-  
23 velop a plan for sustaining space-based measure-  
24 ments of solar wind from the L-1 Lagrangian point  
25 in space and for the dissemination of the data for

1 operational purposes. OSTP shall consult with  
2 NASA, NOAA, and other Federal agencies, and with  
3 industry, in developing the plan.

4 (2) REPORT.—The Director shall transmit the  
5 plan to Congress not later than 1 year after the date  
6 of enactment of this Act.

7 (b) RESEARCH PROGRAM ON SPACE WEATHER AND  
8 AVIATION.—

9 (1) ESTABLISHMENT.—The Administrator  
10 shall, in coordination with the National Science  
11 Foundation, NOAA, and other relevant agencies, ini-  
12 tiate a research program to—

13 (A) conduct or supervise research projects  
14 on impacts of space weather to aviation, includ-  
15 ing impacts on communication, navigation,  
16 avionic systems, and airline passengers and per-  
17 sonnel; and

18 (B) facilitate the transfer of technology  
19 from space weather research programs to Fed-  
20 eral agencies with operational responsibilities  
21 and to the private sector.

22 (2) USE OF GRANTS OR COOPERATIVE AGREE-  
23 MENTS.—The Administrator may use grants or co-  
24 operative agreements in carrying out this subsection.

1       (c) ASSESSMENT OF THE IMPACT OF SPACE WEATH-  
2 ER ON AVIATION.—

3           (1) STUDY.—The Administrator shall enter into  
4 an arrangement with the National Research Council  
5 for a study of the impacts of space weather on the  
6 current and future United States aviation industry,  
7 and in particular to examine the risks for Over-The-  
8 Pole (OTP) and Ultra-Long-Range (ULR) oper-  
9 ations. The study shall—

10           (A) examine space weather impacts on at  
11 least communications, navigation, avionics, and  
12 human health in flight;

13           (B) assess the benefits of space weather in-  
14 formation and services to reduce aviation costs  
15 and maintain safety;

16           (C) provide recommendations on how  
17 NASA, NOAA, and the National Science Foun-  
18 dation can most effectively carry out research  
19 and monitoring activities related to space  
20 weather and aviation; and

21           (D) provide recommendations on how to  
22 integrate space weather information into the  
23 Next Generation Air Transportation System.

24           (2) REPORT.—A report containing the results  
25 of the study shall be provided to the Committee on

1 Science and Technology of the House of Representa-  
2 tives and the Committee on Commerce, Science, and  
3 Transportation of the Senate not later than 1 year  
4 after the date of enactment of this Act.

5 **SEC. 1102. SPACE TRAFFIC MANAGEMENT.**

6 (a) IN GENERAL.—As more nations acquire the capa-  
7 bilities for launching payloads into outer space, there is  
8 an increasing need for a framework under which informa-  
9 tion intended to promote safe access into outer space, op-  
10 erations in outer space, and return from outer space to  
11 Earth free from physical or radio-frequency interference  
12 can be shared among those nations.

13 (b) DISCUSSIONS.—The Administrator, in consulta-  
14 tion with other appropriate agencies of the Federal Gov-  
15 ernment, shall initiate discussions with the appropriate  
16 representatives of other spacefaring nations with the goal  
17 of determining an appropriate framework under which in-  
18 formation intended to promote safe access into outer  
19 space, operations in outer space, and return from outer  
20 space to Earth free from physical or radio-frequency inter-  
21 ference can be shared among those nations.

1 **SEC. 1103. STUDY OF EXPORT CONTROL POLICIES RE-**  
2 **LATED TO CIVIL AND COMMERCIAL SPACE**  
3 **ACTIVITIES.**

4 (a) REVIEW.—The Director of OSTP shall carry out  
5 a study of the impact of current export control policies  
6 and implementation directives on the United States aero-  
7 space industry and its competitiveness in global markets,  
8 and on the ability of United States Government agencies  
9 to carry out cooperative activities in science and tech-  
10 nology and human space flight, including the impact on  
11 research carried out under the sponsorship of those agen-  
12 cies.

13 (b) CONSULTATION.—In carrying out the study, the  
14 Director shall seek input from industry, academia, rep-  
15 resentatives of the science community, all affected United  
16 States Government agencies, and any other appropriate  
17 organizations and individuals.

18 (c) REPORT.—The Director shall provide a report de-  
19 tailing the findings and recommendations of the study to  
20 the Committee on Science and Technology of the House  
21 of Representatives and the Committee on Commerce,  
22 Science, and Transportation of the Senate not later than  
23 9 months after the date of enactment of this Act.

24 **SEC. 1104. ASTRONAUT HEALTH CARE.**

25 (a) SURVEY.—The Administrator shall administer an  
26 anonymous survey of astronauts and flight surgeons to

1 evaluate communication, relationships, and the effective-  
2 ness of policies. The survey questions and the analysis of  
3 results shall be evaluated by experts independent of  
4 NASA. The survey shall be administered on at least a bi-  
5 ennial basis.

6 (b) REPORT.—The Administrator shall transmit a re-  
7 port of the results of the survey to Congress not later than  
8 90 days following completion of the survey.

9 **SEC. 1105. NATIONAL ACADEMIES DECADAL SURVEYS.**

10 (a) IN GENERAL.—The Administrator shall enter  
11 into agreements on a periodic basis with the National  
12 Academies for independent assessments, also known as  
13 decadal surveys, to take stock of the status and opportuni-  
14 ties for Earth and space science discipline fields and Aero-  
15 nautics research and to recommend priorities for research  
16 and programmatic areas over the next decade.

17 (b) INDEPENDENT COST ESTIMATES.—The agree-  
18 ments described in subsection(a) shall include independent  
19 estimates of the life cycle costs and technical readiness  
20 of missions assessed in the decadal surveys whenever pos-  
21 sible.

22 (c) REEXAMINATION.—The Administrator shall re-  
23 quest that each National Academies decadal survey com-  
24 mittee identify any conditions or events, such as signifi-  
25 cant cost growth or scientific or technological advances,

1 that would warrant NASA asking the National Academies  
2 to reexamine the priorities that the decadal survey had  
3 established.

4 **SEC. 1106. INNOVATION PRIZES.**

5 (a) IN GENERAL.—Prizes can play a useful role in  
6 encouraging innovation in the development of technologies  
7 and products that can assist NASA in its aeronautics and  
8 space activities, and the use of such prizes by NASA  
9 should be encouraged.

10 (b) AMENDMENTS.—Section 314 of the National Aer-  
11 onautics and Space Act of 1958 is amended—

12 (1) by amending subsection (b) to read as fol-  
13 lows:

14 “(b) TOPICS.—In selecting topics for prize competi-  
15 tions, the Administrator shall consult widely both within  
16 and outside the Federal Government, and may empanel  
17 advisory committees. The Administrator shall give consid-  
18 eration to prize goals such as the demonstration of the  
19 ability to provide energy to the lunar surface from space-  
20 based solar power systems, demonstration of innovative  
21 near-Earth object survey and deflection strategies, and in-  
22 novative approaches to improving the safety and efficiency  
23 of aviation systems.”; and

- 1           (2)    in    subsection   (i)(4)    by    striking  
2        “\$10,000,000” and inserting “\$50,000,000”.

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